Levels of Significance (α - alpha)

Difference between level of significance and Confidence level.

Level of significance → The probability with which we will reject a null hypothesis when it is true is the level of significance.
- It is denoted by α.
- Probability of Type 1 error.

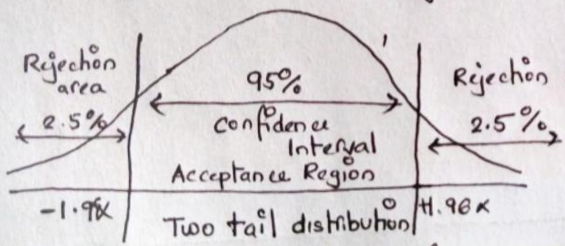
Confidence level → The probability with which we will accept a null hypothesis when it is true is the confidence level.
- It is denoted by $1-\alpha$ (because probability sums to 1)

Levels of Significance (α value)			Confidence level	
0.01	1%	→	99%	.99
0.05	5%	→	95%	.95
.1	10%	→	90%	.90

level of significance → Chances / by chance we accept the null hypothesis (error chances).

Confidence level → True chances we accept the null hypothesis.

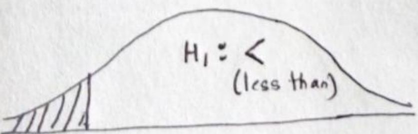
Suppose from Z test, we get 5% or 0.05 significance level.



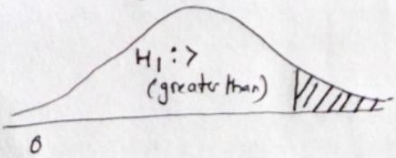
Level of Significance (α)	Corresponding confidence interval in terms of Z value.
.01	-1.645α to $+1.645\alpha$
0.05	-1.96α to $+1.96\alpha$.
.1	-2.58α to $+2.58\alpha$.

- P value > level of significance, Null hypothesis is accepted.
- P value < level of significance, Null hypothesis is rejected.

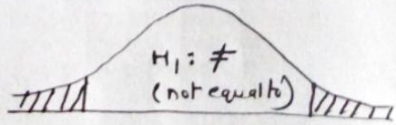
Left tail test



Right tail test



Two tail test



H_1 → Alternative hypothesis.

Suppose, we have a packet of 100 chocolates.

Null hypothesis - Packet contain 100 chocolates.

Alternate hypothesis - ① If we think chocolates are less than 100 chocolates. i.e, count (chocolates) < 100 chocolates, use left tail test.

② If we think chocolates are more than 100 chocolates. i.e, count (chocolates) > 100 chocolates, use Right tail test.

③ If we think chocolates are not exactly equal to 100 chocolates, count (chocolates) ≠ 100 chocolates, use Two tail test